

Amendments to the Specification:

Please delete the first line of page 1, as follows:

~~Description~~

Please add the following new header on page 1 at line 2:

BACKGROUND

Please replace the paragraph beginning at page 1, line 3 with the following amended paragraph:

A process ~~Process~~ for structuring at least one layer as well as an electrical component with structures from the layer are described.

Please replace the paragraph beginning at page 1, line 6 with the following amended paragraph:

In the production of semiconductor structures and electrical components, it is frequently necessary to structure at least ~~one structure~~ two structures in one layer. Frequently, a separate photoresist is applied onto the layer for each structure being produced. It is exposed, developed and then the structure of the photoresist is transferred into the layer. Such procedures are time intensive and complicated, since they require the separate application of two photoresist layers as well as the separate structuring of the first and second ~~structure~~ structures out of at least one layer.

Please add the following new header on page 1, at line 14:

SUMMARY

Please delete the first line of each page of the specification, as follows:

P2004,0327

Please amend the following paragraph starting on page 2 at line 6, as follows:

Unlike the above described customary procedures, the process in the invention requires only one mask structure, since process steps C) and D) structure the layer in the invention by means of the first and second structures of the mask structure through isotropic and then anisotropic processes. In isotropic structuring procedures, the structuring rate is direction independent, for example as in isotropic etching with wet chemical ~~corrosive~~ etching agents. Due to the isotropic ~~structure~~structuring, large areas of the single layer are removed under the first structure in process step C), so that the underlying areas of this layer are then accessible for structuring in process step D). In the anisotropic procedures, the structuring rate is direction dependent. Possible isotropic structuring methods in process step C) include, for instance, wet chemical etching methods, and possible anisotropic structuring methods in process step D) include, for instance, sputter processes. Further examples of isotropically-acting etching agents are wet chemical ~~corrosive~~ etching media such as HF and HCl solutions. Examples of anisotropic etching agents are, for instance, argon or chloride plasma. It is therefore possible as per the invention to use the combination of isotropic structuring methods in process step C) and anisotropic structuring methods in process step D) to generate two structures in at least one layer with only one mask structure.

Please amend the following paragraph starting on page 3 at line 17, as follows:

The first structure of the mask structure can be a rough structure which possesses relatively large areas by comparison to the ~~more detailed~~ second structure, which is a fine structure. The smallest area of the rough structure is preferably twice as large as the smallest area of the fine structure. Due to the isotropic ~~structure~~ structuring in process step C), this may lead to ~~hollow bubbles undercutting~~ in the second fine structure of the mask structure, so that, for the most part, only the rough structure is transferred into the at least single layer (for example, see Fig. 1C). Therefore, the isotropic structuring in C) can work across the fine structure, so that there is complete etching below it, and it is therefore not transferred. Only in the anisotropic structuring step D), the second fine structure is then transferred into the at least single layer.

When a first and second layer is applied to the substrate, the rough structure is advantageously transferred into the second layer, and the fine structure is transferred into the first layer. The rough structure may, for instance, consist

Please amend the following paragraph starting on page 4 at line 15, as follows:  
Furthermore, in the case of the presence of a first and second layer on the substrate, it is advantageous when, in process step C), a etching agent which is selective for the second layer is used, and if applicable, an etching agent which is selective for the first layer is used in process step D). In this manner, it is possible to guarantee that only the respectively desired layers are structured in process steps C) and D). The selection of the etching agents in these processes depends on the consistency of the first and second layers. If the first layer is a metal layer and the second layer is a dielectric layer, such as  $\text{SiO}_2/\text{SiO}_2$ , it is possible, for instance, to use an HF process in C) and a sputter process in D).

Please amend the following paragraph starting on page 5 at line 20, as follows:  
In process step B) of the procedure as it is embodied in the invention, a photoresist layer is advantageously produced, and structured into a mask structure using photo-lithography (structuring by means of exposure and subsequent development). Structured photoresist layers are particularly suitable as mask structures in the process as per the invention. It is, however, also possible to generate mask structures in process step B) which cannot be photo structured. For example, it would be possible to generate a polymer layer on the second layer, for instance a polyamide polyimide layer, and then structure this layer into a mask structure by means of structured etching ~~a-structure through~~ a mask.

Please amend the following paragraph starting on page 7 at line 3, as follows:

of the electrical component. Therein, in process step A), the substrate is provided with additional functional layers and in process step B), a mask structure with a geometrically formed flat area is generated as the first structure and based on this, linear structures are generated as the second ~~layer structure~~. Such a mask is ~~show~~shown, for instance, in Figure 1. Subsequently, in process step C), the second layer is ~~formed~~ structured into an area which is situated below the geometrically formed area of the mask structure, wherein a bond pad is formed (see, for instance, Figure 1C and figure 2). Then, in process step D), the ~~line-formed~~ linear structures of the mask structure are transferred into the first layer, wherein contact lines are formed (for instance, see Figure 1E). Herein, the bond pad has a shape which largely corresponds to the geometric form of the area of the mask structure. This means that in comparison to the geometric form of the area of the mask structure, the bond pad has additional recessed areas, and therefore, also a cross section which widens towards the substrate (for instance, see figures 1C, 2 and 3). The recessed areas and the cross section which widens towards the substrate are to be traced back to the isotropic structuring process in C), which leads to the undercutting of the mask structure.

Please amend the following paragraph starting on page 9 at line 1, as follows:

for instance, be ~~placed against~~ applied to the bond pad by means of a bonded wire, thereby acting evenly on the complete substrate or the functional layers applied thereon. The contact lines thereby distribute the current which is applied to the bond pad as evenly as possible across the functional layers of the component. Herein, the contact lines can assume highly varied forms as desired. For instance, they can be formed in grids (for example, see Figures 2 and 4). Furthermore, the contact lines can also be formed in rays and ~~jagged in zigzags~~ as shown in Figure 3.

Please amend the following paragraph starting on page 9 at line 12, as follows:

It is also possible to use variants of the procedure as per the invention to produce active elements, such as electrically conducting structures of electrical components and their bond pads. For instance, the electrically conducting micro-structures (e.g. interdigital ~~pinger~~ finger

electrodes) of surface wave elements and bond pads which are in electrical contact therewith can be produced especially simply using variations of the procedure as per the invention. The electrically conducting microstructures of surface wave elements include, for instance, ~~aluminium~~ aluminum, while the bond pads which are in contact with them may, for instance, include gold.

Please add the following new header on page 11, at line 16:

BRIEF DESCRIPTION OF THE FIGURES

Please add the following new header on page 11, at line 36:

DETAILED DESCRIPTION

Please amend the following paragraph starting on page 12 at line 7, as follows:

Subsequently, in process step B) as shown in Figure 1B, a mask structure 20 is applied to the second layer 15. This mask structure 20 herein possesses a geometrically formed area 20A, below which the bond pad is formed. Furthermore, the mask structure 20 has ~~line-shaped~~ linear structures 20B which originate from the area 20A, and which, in the event of contacts being produced, serve for structuring the later contact lines from the first layer 10. These ~~line-formed~~ linear structures of the mask structure 20 can be in the form of grates.

Please amend the following paragraph starting on page 13 at line 7, as follows:

This can, for instance, be accomplished by drying the mask structure so that the watery cleaners which were used to flush out the corrosive medium which was utilized in process step C) are removed. The ~~corrosive~~ etching medium can, for instance, include wet chemical etching agents. For drying, the entire arrangement of the mask structure, both layers as well as the substrate, can be placed in a centrifuge device, wherein it is particularly advantageous to lower the undercut areas of the mask structure 20 onto the first layer 10 at the same time. Lowering the

mask structure 20 onto the first layer 10 enables a particularly precise transfer of the structure of the mask structure onto the first layer 10 in the subsequent process step D).

Please amend the following paragraph starting on page 13 at line 19, as follows:

Subsequently, in process step D), the first layer 10 is structured through the mask structure 20, wherein the smaller ~~structured~~ structures 20B of the mask structure 20 are ~~is~~ transferred into the first layer. In this process, the first structured layer 10A is formed (Figure 1E). Herein, a contact grate is formed, as shown, for instance, in the top view in figures 2A and 2B.

Please amend the following paragraph starting on page 13 at line 26, as follows:

Following this, the mask structure 20 is removed in process step E), wherein the bond pad 25, consisting of the first and second structured layers 10A, 15A and additionally the contact lines 30, is ~~are~~ uncovered (Figure 1F). The bond pad 25 can, for instance, serve for electrical contacting of a component when a wire is bonded onto it.

Please amend the following paragraph starting on page 14 at line 19, as follows:

Figure 3 shows a top view of a further possible embodiment of a bond pad 25 with contact lines 30 in the form of ~~zigzag-formed~~ jagged rays. The original geometric form of the area of the mask structure is indicated here in broken lines as form 20A. The original form was square in this case.

Please amend the following paragraph starting on page 15 at line 3, as follows:

Figure 4 shows a schematic perspective view of a component as per the invention. In this case, the component is an InGaN-LED. Herein, various functional layers are applied onto a substrate 5, for instance a sapphire substrate. These layers may include, for instance, a GaN buffer layer 45, n-endowed gallium nitride 40, an InGaN multiquantum well 50 as well as P-gallium nitride 36. Furthermore, there are other additional gallium nitride layers which are

endowed with various elements, such as ~~aluminium~~ aluminum or indium, which are not identified individually here. On the p-endowed gallium nitride layer, which frequently shows poor electrical conductivity, contacts are mounted. These can, for instance, be produced using the process as per the invention. Namely, the bond pad 25 with the – for instance - additionally present recessed areas 25A which result from production by means of the process as per the invention, as well as a contact grate 30 for better transmission of the electrical current onto the pre-endowed gallium nitride layer 36. Furthermore, there is also an n-electrode present on the n-endowed gallium nitride layer. The contacts as per the invention can herein also be mounted on the n-endowed gallium nitride layer.

Please amend the following paragraph starting on page 14 at line 19, as follows:  
the mask structure is formed. This is then dried for 30 minutes at 120 ° C. In process step C), the second layer, the gold layer, is then etched with an aqueous cyanide containing ~~corrosive~~ etching medium for gold, wherein follow-up etching takes place for 1 ½ minutes in order to obtain good undercutting of the mask structure. The ~~corrosive~~ etching medium is then removed by flushing with water, and drying takes place in the spin rinse dryer at a maximum of 2400 revolutions per minute, wherein the undercut areas of the mask structure are additionally lowered onto the first layer, the platinum layer. Herein, additional drying takes place subsequently at low revolutions in the spin rinse dryer with nitrogen flow. After this process, the platinum layer is etched for 6 minutes in argon plasma, using sputter etching (process step D)). Then the mask structure is removed in a post-strip process.

Please replace the header on page 17, at line 3 with the following header:

~~Patent Claims~~ What is claimed is:

Please replace the header beginning at page 23, line 3, as follows:

~~Summary~~ Abstract

Applicant : Hackenberger et al.  
Serial No. : 10/599,949  
I.A. Filed : April 21, 2005  
Page : 9 of 17

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US N

Please amend the first paragraph of the Abstract on page 23, starting on line 5 as follows:

~~Process~~ A process for structuring at least one layer as well as an electrical component  
with structures from the layer are described.

Please delete the line on page 23, at line 21:

~~Significant figure: Figure 1~~